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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/390,910	09/07/1999	JIN-YI PAN	552.111US01	7779

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EXAMINER	
SEDIGHIAN, REZA	

ART UNIT	PAPER NUMBER
2633	

DATE MAILED: 09/08/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Application No.	Applicant(s)	
09/390,910	PAN, JIN-YI	
Examiner	**Art Unit**	
M. R. Sedighian	2633	

Office Action Summary

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 June 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-34* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *13-15,20,24-27 and 32-34* is/are allowed.

6)☒ Claim(s) *1-8,16-19,21 and 28-31* is/are rejected.

7)☒ Claim(s) *9-12,22 and 23* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *07 September 1999* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

1. This communication is responsive to applicant's 6/1/2004 amendments in the application of Jin-Yi Pan filed 9/7/1999. The amendments have been entered. Claims 1-34 are now pending.

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 21, 28, and 30 are rejected under 35 U.S.C. 102(e) as being anticipated by Kinoshita et al. (US Patent No: 6,768,578).

Regarding claim 21, Kinoshita teaches a method for fully utilizing an optical spectrum spanning a predefined low attenuation region of an optical transmission spectrum (col. 6, lines 61-67, col. 7, lines 1-11) for communicating information on optical fibers of an optical network (fig. 3), comprising: separating (1, fig. 3) optical signals within the predefined low-attenuation region (col. 7, lines 5, 8) into in-band (the optical signals of 1.58 μm BAND, fig. 3) and out-band optical signals (the optical signals of 1.55 μm BAND, fig. 3), wherein the in-band signals substantially corresponds to a first wavelength range (col. 7, lines 3-5) within the predefined low-attenuation region designated for optical amplification (note that attenuation is low for optical signals in the range of 1535 nm to 1565 nm), and wherein the out-band signal substantially correspond to a second wavelength range within the predefined low-attenuation region and exclusive of the first wavelength range (note that the second band is different than the

first band, and the attenuation is low in this transmission band which includes optical signals of the range 1575 to 1605 nm); routing the in-band and out-band optical signals to in-band and out-band output ports associated with destination nodes (2, 3, fig. 3, note that the two bands are routed to amplifier sections 3 and 2, respectively, which are considered as destination nodes, and wherein the two bands are outputted by respective output ports of each section); and combining (4, fig. 3) the in-band and out-band optical signals from the output ports to a united collection of optical signals for collective transmission (col. 8, lines 1-9).

Regarding claim 28, Kinoshita teaches reflecting the optical signals within the first wavelength range onto a first signal path (optical signals of 1.58 μm band are routed from coupler 1 through a first signal path to amplifier section 3) and passing the optical signals within the second wavelength range onto a second signal path (optical signals of 1.55 μm band are routed from coupler 1 through a second signal path to amplifier section 2).

Regarding claim 30, Kinoshita teaches reflecting the in-band signals from a first signal path onto a collective signal path (col. 9, lines 52-55, the 1.58 μm band signals are routed from the amplifier section 3 to couplers 4 and 13 and to a collective output port) and passing the out-band signals from a second signal path onto the collective signal path (the 1.55 μm band signals are routed from the amplifier section 2 to couplers 4 and 13 and to a collective output port).

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 29 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kinoshita et al. (US Patent No: 6,768,578) in view of Mizrahi (US Patent No: 5,457,760).

Regarding claims 29 and 31, Kinoshita differs from the claimed invention in that Kinoshita does not disclose a fiber Bragg grating as a coupler, or band splitter. Mizrahi teaches a fiber Bragg grating coupler, or band splitter (230, 250, fig. 2) that splits bands ($\lambda 1$–$\lambda 4$ and $\lambda 5$–$\lambda 8$, fig. 2) of optical signals (col. 2, lines 64-67, col. 5, lines 1-27). Therefore, it would have been obvious to a person of ordinary skill in the art at the time of invention to incorporate a Bragg grating band splitter coupler such as the one of Mizrahi for the optical coupler demultiplexer in the optical transmission system of Kinoshita in order to provide an optical coupler with low loss and high transmission accuracy.

6. Claims 1-8 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ma et al. (US Patent No: 6,151,160) in view of Bala et al. (US Patent No: 6,272,154), or Barnsley (US Patent No: 5,488,501).

Regarding claims 1 and 18, Ma teaches a network node circuit (105, fig. 4) for use in WDM networks (col. 2, lines 37-40) to allow utilization of a wide optical communication band (col. 3, lines 66-67, col. 4, lines 1-3), comprising: a band splitter (303, fig. 4) to receive a plurality of wavelengths of an optical communication band (col. 4, lines 8-13) and to separate a first plurality of optical signals (Band 1, fig. 4) within the amplification band (note that Band 1 optical signals are amplified by an amplifier 308_1 and they are within an amplification band of the amplifier) from a second plurality of the optical signal of a second wavelength range (Band 2, fig. 4) outside the amplification band (note that Band 2 is different from Band 1 and is not in

the amplification band of the amplifier 308_1), and a band combiner (305, fig. 4) coupled to receive the first and second pluralities of optical signals and to combine the signals (col. 4, lines 15-16). Ma differs from the claimed invention in that Ma does not disclose a cross-connect to receive the first and second pluralities of optical signals and to route the signals through cross-connect to targeted output ports. Bala teaches an optical transmission system (fig. 2) that is comprised of an optical demultiplexer to split or demultiplex the optical signals (216a, fig. 2), an optical cross-connect (250, fig. 2) for cross-connecting band of optical signals (col. 6, lines 56-59, col. 9, lines 60-62), and a combiner or multiplexer (236a, fig. 2) to combine the signals (col. 7, lines 50-55). Likewise, Barnsley teaches an optical cross-connect (43, fig. 5) that can switch bands of optical signals (col. 8, lines 7-14). It is well known to incorporate optical cross-connect switches along the transmission lines of an optical communication system in order to provide selective switching between input ports and output ports to further increase the transmission capacity of the system. Therefore, it would have been obvious to a person of ordinary skill in the art at the time of invention to incorporate an optical cross-connect switch such as the one of Bala, or Barnsley along the transmission fiber lines in the optical communication system of Ma in order to route the data wavelengths along different paths and to increase the capacity of the network.

Regarding claim 2, Ma teaches the first wavelength range is capable of being optically amplified (col. 4, lines 12-13).

Regarding claim 3, Ma teaches EDFA amplifiers (308_1, 308_2, fig. 4) for amplifications (col. 4, lines 14-15).

Regarding claims 4-5, Ma teaches the second wavelength range is outside of the first wavelength range (col. 3, lines 64-66).

Regarding claim 6, Ma teaches a band comprising wavelengths from approximately 1240 to 1610 nanometers (fig. 1 and col. 1, lines 45-50).

Regarding claim 7, Ma teaches optical amplifiers (308_1, 308_2, 308_3, fig. 4) coupled to the band splitter (303, fig. 4) to receive and optically amplify the optical signals within the first wavelength range (col. 3, lines 62-66).

Regarding claim 8, Ma teaches the optical amplifiers are EDFAs (col. 4, line 15).

7. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ma et al. (US Patent No: 6,151,160) in view of Bala et al. (US Patent No: 6,272,154), or Barnsley (US Patent No: 5,488,501) and in further view of Mizrahi (US Patent No: 5,457,760).

Regarding claim 16, the modified optical transmission system of Ma and Bala, or Barnsley differs from the claimed invention in that Ma and Bala, or Barnsley do not disclose the band splitter comprises a fiber Bragg grating band splitter. Mizrahi teaches a fiber Bragg grating band splitter (230, 250, fig. 2) that splits bands ($\lambda 1$–$\lambda 4$ and $\lambda 5$–$\lambda 8$, fig. 2) of optical signals (col. 4, lines 64-67, col. 5, lines 1-27). Therefore, it would have been obvious to a person of ordinary skill in the art at the time of invention to incorporate a Bragg grating band splitter such as the one of Mizrahi for the band splitter in the modified optical transmission system of Ma and Bala, or Barnsley in order to provide an optical splitter with low loss and high transmission accuracy.

8. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ma et al. (US Patent No: 6,151,160) in view of Bala et al. (US Patent No: 6,272,154), or Barnsley (US Patent No: 5,488,501) and in further view of Archambault (US Patent No: 6,567,196).

Regarding claim 17, the modified optical transmission system of Ma and Bala, or Barnsley differs from the claimed invention in that Ma and Bala, or Barnsley do not disclose the band combiner is a fiber Bragg grating band combiner. Archambault teaches a fiber Bragg grating band combiner (col. 8, lines 59-65 and 1310, fig. 13). Therefore, it would have been obvious to an artisan at the time of invention to incorporate a Bragg grating band combiner such as the one of Archambault for the band combiner in the modified optical transmission system of Ma and Bala, or Barnsley in order to provide a low loss combiner.

9. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ma et al. (US Patent No: 6,151,160) in view of Bala et al. (US Patent No: 6,272,154), or Barnsley (US Patent No: 5,488,501) and in further view of Ryu (US Patent No: 5,940,197), or Hamel et al. (US Patent No: 5,771,112).

Regarding claim 19, the modified optical transmission system of Ma and Bala, or Barnsley differs from the claimed invention in that Ma and Bala, or Barnsley do not disclose the an optical add/drop multiplexer to selectively add and drop additional optical signals to the first and second plurality of wavelength ranges. Ryu teaches an optical transmission system (fig. 2), wherein optical multiplexed signals (col. 2, lines 50-55) are splitted (col. 4, lines 34-36 and 2, fig. 2) and additional signals (col. 6, lines 32-55) are added (9′-1, fig. 2) or dropped (8′-1, fig. 2) and at the end signals are combined (10, fig. 2). Hamel teaches optical add-drop multiplexers

(M1, M2, fig. 1) that are inserted along transmission fibers between an optical splitter (C1, fig. 1) and a combiner (C2, fig. 1). It is well known to add an optical switch such as optical switch 20 of Ryu, or add-drop multiplexers such as the ones of Hamel along the transmission lines in an optical transmission system to further add or drop additional signals to increase the transmission capacity, or to route the optical signals to different destinations. Therefore, it would have been obvious to an artisan at the time of invention to incorporate an optical switch such as the one Ryu, or add-drop multiplexers such as the ones of Hamel, along the transmission fibers in the modified optical transmission system of Ma and Bala, or Barnsley to further add or drop additional optical signals for purposes of signal processing or control.

10. Claims 9-12 and 22-23 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

11. Claims 13-15, 20, 24-27, and 32-34 are allowed over prior art of record.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to M. R. Sedighian whose telephone number is (571) 272-3034. The examiner can normally be reached on M-F (from 9 AM to 5 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on (571) 272-3022. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

M. R. Sedighian

M. R. SEDIGHIAN
PRIMARY EXAMINER